

### ABSTRACT OF THE DISCLOSURE

A Raman amplifier, system and method using a plurality of pumps configured to pump light into an optical fiber so as to Raman-amplify an optical signal propagating through the optical fiber. The Raman amplifier also includes an optical coupler configured to optically interconnect the pumping device with the optical fiber, and a control unit configured to control the pumping device so as to achieve a target amplification performance. Further, the control unit monitors the Raman-amplified WDM signal and determines if the monitored Raman-amplified WDM signal is within an allowable tolerance of the target amplification performance. If the Raman-amplified signal is not within the allowable tolerance, the control unit actively controls the pumps to bring the monitored Raman-amplified signal within the allowable tolerance of the target amplification profile.